

ZXMN3B04N8

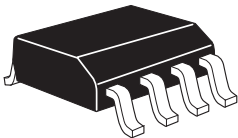
30V N-CHANNEL ENHANCEMENT MODE MOSFET 2.5V GATE DRIVE

SUMMARY

$V_{(BR)DSS}=30V$: $R_{DS(on)}=0.025\Omega$; $I_D= 8.9A$

DESCRIPTION

This new generation of Trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



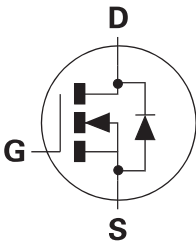
SO8

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

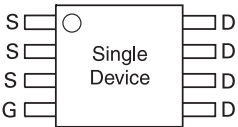
APPLICATIONS

- DC - DC converters
- Power management functions
- Disconnect switches
- Motor control



ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3B04N8TA	7"	12mm	500 units
ZXMN3B04N8TC	13"	12mm	2500 units



Top View

DEVICE MARKING

- ZXMN
3B04

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V_{DSS}	30	V
Gate source voltage	V_{GS}	± 12	V
Continuous drain current @ $V_{GS}=4.5V$; $T_A=25^{\circ}C$ ^(b) @ $V_{GS}=4.5V$; $T_A=70^{\circ}C$ ^(b) @ $V_{GS}=4.5V$; $T_A=25^{\circ}C$ ^(a)	I_D	8.9 7.3 7.2	A A A
Pulsed drain current ^(c)	I_{DM}	45	A
Continuous source current (body diode) ^(b)	I_S	4.5	A
Pulsed source current (body diode) ^(c)	I_{SM}	45	A
Power dissipation at $T_A=25^{\circ}C$ ^(a) Linear derating factor	P_D	2 16	W mW/ $^{\circ}C$
Power dissipation at $T_A=25^{\circ}C$ ^(b) Linear derating factor	P_D	3 24	W mW/ $^{\circ}C$
Operating and storage temperature range	$T_J; T_{stg}$	-55 to +150	$^{\circ}C$

THERMAL RESISTANCE

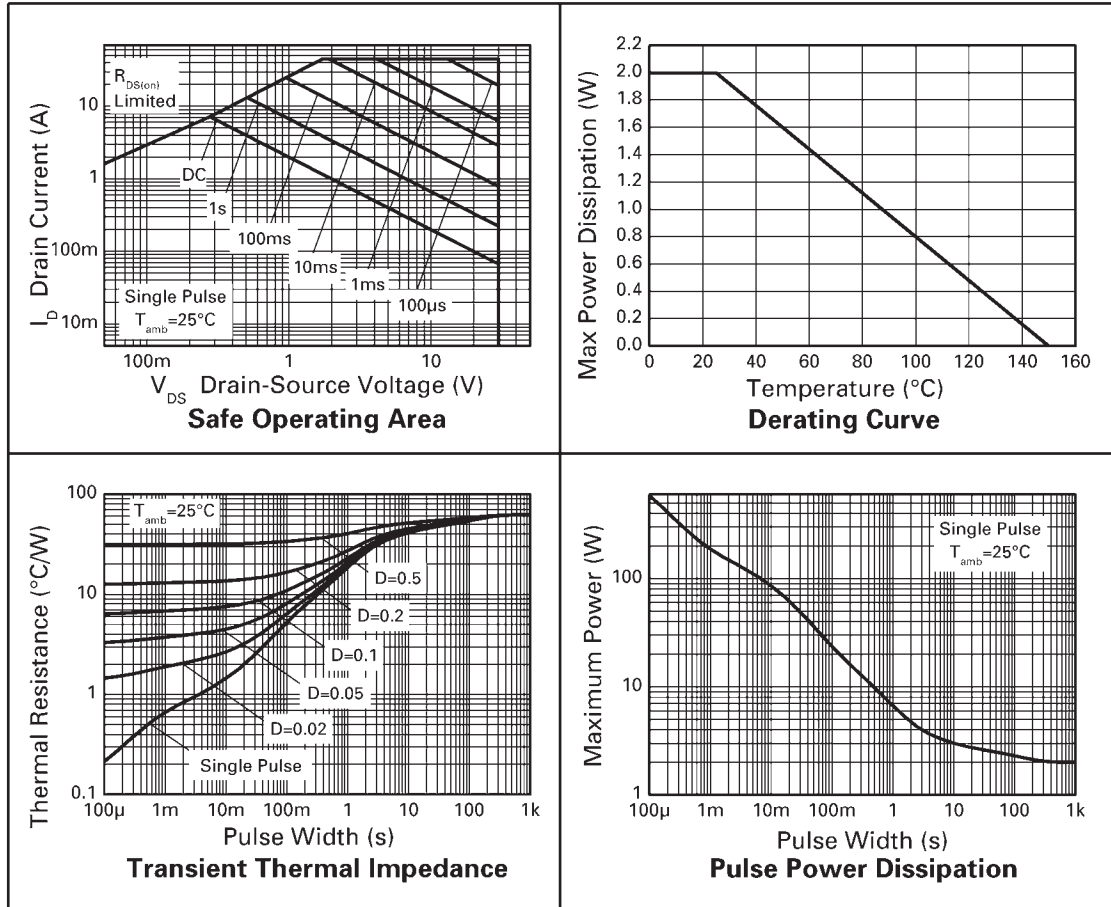
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient ^(a)	$R_{\theta JA}$	62.5	$^{\circ}C/W$
Junction to ambient ^(b)	$R_{\theta JA}$	41.4	$^{\circ}C/W$

NOTES

- (a) For a device surface mounted on 50mm x 50mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
 (b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ sec.
 (c) Repetitive rating - 25mm x 25mm FR4 PCB, $D=0.02$, pulse width 300 μs - pulse width limited by maximum junction temperature.

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CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

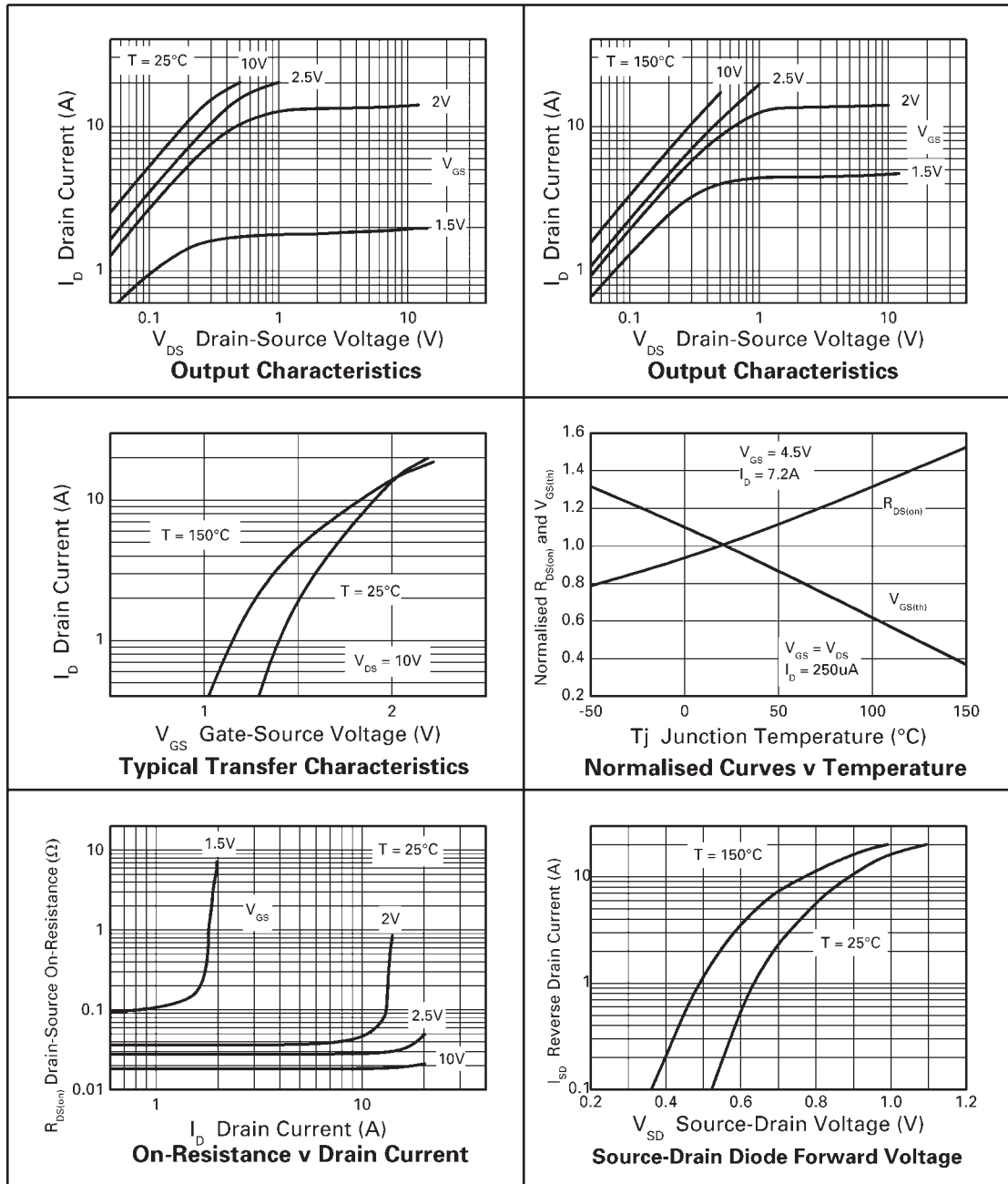
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-source breakdown voltage	V _{(BR)DSS}	30			V	I _D =250μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}			0.5	μA	V _{DS} =30V, V _{GS} =0V
Gate-body leakage	I _{GSS}			100	nA	V _{GS} =±12V, V _{DS} =0V
Gate-source threshold voltage	V _{GS(th)}	0.7			V	I _D =250μA, V _{DS} = V _{GS}
Static drain-source on-state resistance ⁽¹⁾	R _{DS(on)}		0.021	0.025	Ω	V _{GS} =4.5V, I _D =7.2A
			0.028	0.040	Ω	V _{GS} =2.5V, I _D =5.7A
Forward transconductance ⁽¹⁾ ⁽³⁾	g _{fs}		24		S	V _{DS} =15V, I _D =7.2A
DYNAMIC ⁽³⁾						
Input capacitance	C _{iss}		2480		pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
Output capacitance	C _{oss}		318		pF	
Reverse transfer capacitance	C _{rss}		184		pF	
SWITCHING ⁽²⁾ ⁽³⁾						
Turn-on delay time	t _{d(on)}		9		ns	V _{DD} =15V, V _{GS} =4.5V I _D =1A R _G ≐6.0Ω,
Rise time	t _r		11.5		ns	
Turn-off delay time	t _{d(off)}		40		ns	
Fall time	t _f		16.6		ns	
Total gate charge	Q _g		23.1		nC	V _{DS} =15V, V _{GS} =4.5V, I _D =7.2A
Gate-source charge	Q _{gs}		4.9		nC	
Gate-drain charge	Q _{gd}		6.2		nC	
SOURCE-DRAIN DIODE						
Diode forward voltage ⁽¹⁾	V _{SD}		0.85	0.95	V	T _J =25°C, I _S =8A, V _{GS} =0V
Reverse recovery time ⁽³⁾	t _{rr}		17.9		ns	T _J =25°C, I _F =3.2A,
Reverse recovery charge ⁽³⁾	Q _{rr}		10		nC	di/dt= 100A/μs

NOTES

- (1) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.
 (2) Switching characteristics are independent of operating junction temperature.
 (3) For design aid only, not subject to production testing.

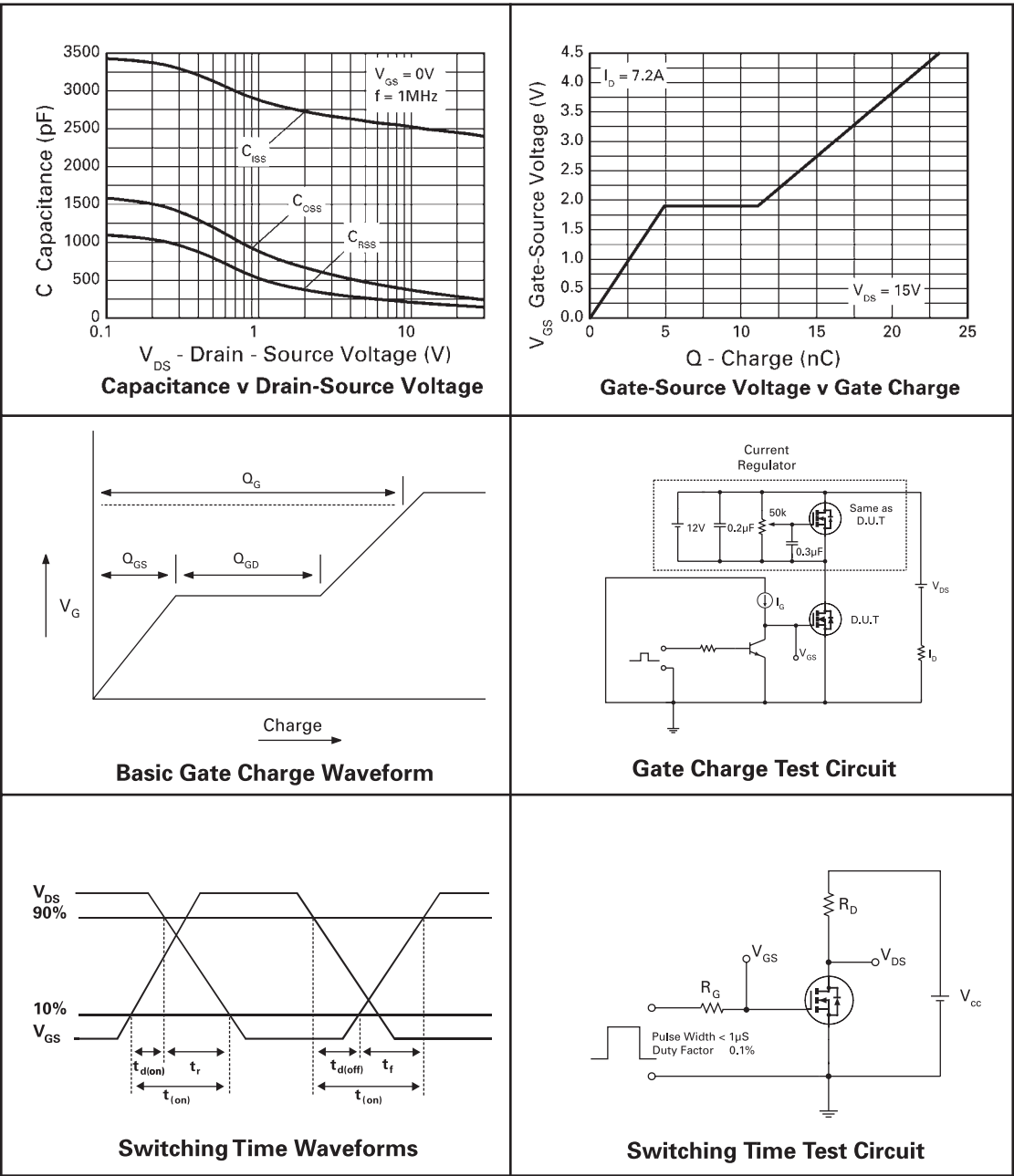
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TYPICAL CHARACTERISTICS



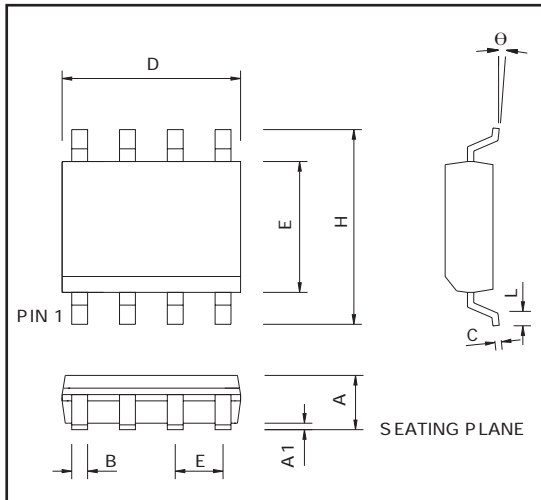
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TYPICAL CHARACTERISTICS



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PACKAGE OUTLINE



Controlling dimensions are in inches. Approximate conversions are given in millimeters

PACKAGE DIMENSIONS

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.053	0.069	1.35	1.75	e	0.050 BSC		1.27 BSC	
A1	0.004	0.010	0.10	0.25	b	0.013	0.020	0.33	0.51
D	0.189	0.197	4.80	5.00	c	0.008	0.010	0.19	0.25
H	0.228	0.244	5.80	6.20	θ	0°	8°	0°	8°
E	0.150	0.157	3.80	4.00	h	0.010	0.020	0.25	0.50
L	0.016	0.050	0.40	1.27					

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ISSUE 2 - MAY 2004